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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/560,910

12/16/2005

Takeshi Inaba

Q91600

6082

23373 7590 11/23/2011
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

WOOD, ELLEN S

ART UNIT

PAPER NUMBER

1782

NOTIFICATION DATE

DELIVERY MODE

11/23/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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sughrue@sughrue.com
PPROCESSING@SUGHRUE.COM

Office Action Summary	Application No. 10/560,910	Applicant(s) INABA, TAKESHI	
	Examiner ELLEN S. WOOD	Art Unit 1782	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1 and 5-15 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1 and 5-15 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10/20/2011</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 5-7 and 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jing et al. (6,156,400, hereinafter "Jing") in view of Inaba et al. (US 6,881,460 "Inaba").

In regards to claim 1, Jing discloses multi-layer constructions comprising a fluoropolymer and a substantially non-fluorinated polymer material (col. 1 lines 5-11). A fluoropolymer material consists of fluorine-containing ethylenic-polymers that have functional groups that contain a carbonyl group (cols. 3-4 lines 61-67 and 1-24). fluoropolymer material that can be used is fluorine-containing ethylenic polymers (col. 4 lines 25-37). The non-fluorinated polymer consists of polyamides (col. 5 lines 36-50). The heat and pressure of the method by which the layers are brought together, for example co-extrusion processes, may be adequate to provide sufficient adhesion (col. 8 lines 27-44). Thus, they are directly firmly adhered to one another and thermal fusion bonded. The multi-layer articles can have two, three, or even more separate layers (col. 8 lines 63-64). The multi-layer article can include a fluorinate layer, a substantially non-fluorinated layer, and optionally further comprising one or more additional layers comprising fluorinated or non-fluorinated polymers (cols. 8-9 lines 63-67 and line 1). A

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bi-layer article comprising a fluorinated layer and a substantially non-fluorinated layer can be formed(col. 9 lines 1-4). One or more additional layers comprising fluorinated or non-fluorinated polymer can either thereafter or simultaneously (i.e. to form a tri-layer article), be bonded to one or more the fluorinated layer or substantially non-fluorinated layer, to produce a multi-layer article having three or more layers (col. 9 lines 7-12). The non-fluorinated polymer comprises thermoplastic polyurethanes (col. 9 lines 13-16). Thermoplastic polyurethanes are polyurethane-based thermoplastic elastomers. The polyamide layers contain

Jing notes that the polyamide material should be a particular polyamide material that meets the physical requirements of the particular application for the resulting article (col. 5 lines 50-53). However, Jing is silent with regards to the polyamide-based resin amine value of 15 to 35 (equivalents/ 10^6 g).

Inaba discloses a multilayer molding having a polyamide based resin as an outer layer and a fluorine containing resin as an inner layer (abstract). Polyamide based resin shows an unsatisfactory level of adhesion strength when the polyamide based resin has an amine value of less than 10 (equivalents/ 10^6 g) (col. 4 lines 9-19). The mechanical properties of the laminates were inferior when the amine value exceeded 60 (equivalents/ 10^6 g) (col. 4 lines 20-21). Thus, it was discovered that an amine value of 10 to 35 (equivalents/ 10^6 g) provided the most satisfactory level of adhesion strength while maintaining mechanical properties.

Thus, it would be obvious to one of ordinary skill in the art that the polyamide based resin with the amine values as seen in Inaba would be applied to the polyamide

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based resin of Jing to produce a polyamide-based tie layer with the optimal adhesion to the fluorinated layer to produce an article with enhanced peel strength and durability.

The combination of Jing and Inaba is silent with regards to the initial adhesive strengths.

It would naturally flow that the combination of Jing and Inaba would have initial adhesive strengths not lower than 25 N/cm, because the compositions of the thermoplastic polymer layer, the polyamide-based resin layer and the thermoplastic resin layer are substantially similar. Articles with a substantially similar structure and chemical composition as the claimed invention. Products of identical structure and composition cannot have mutually exclusive properties. The burden is on the Applicants to prove otherwise.

In regards to claim 5, Jing discloses that the thermoplastic elastomer is thermoplastic polyurethane (col. 9 lines 13-16).

In regards to claim 6, Jing is silent with regards to the polyamide-based resin having an acid value of not higher than 80 (equivalents/ 10^6 g).

Inaba discloses a multilayer molding having a polyamide based resin as an outer layer and a fluorine containing resin as an inner layer (abstract). Polyamide based resin shows an unsatisfactory level of adhesion strength when the polyamide based resin has an amine value of less than 10 (equivalents/ 10^6 g) (col. 4 lines 9-19). The mechanical properties of the laminates were inferior when the amine value exceeded 60 (equivalents/ 10^6 g) (col. 4 lines 20-21).

Thus, it would be obvious to one of ordinary skill in the art that the polyamide based resin with the amine value not higher than 60 (equivalents/10⁶g) as seen in Inaba would be applied to the polyamide based resin of Jing to produce a polyamide-based tie layer with the optimal adhesion to the fluorinated layer to produce an article with enhanced peel strength and durability.

In regards to claim 7, the combination of Jing and Inaba is silent with regards to the elasticity in tension.

It would naturally flow that the combination of Jing and Inaba would have elasticity in tension of lower than 400 MPa, because the compositions of the thermoplastic polymer layer, the polyamide-based resin layer and the thermoplastic resin layer are substantially similar. Articles with a substantially similar structure and chemical composition as the claimed invention. Products of identical structure and composition cannot have mutually exclusive properties. The burden is on the Applicants to prove otherwise.

In regards to claim 9, the combination of Jing and Inaba is silent with regards to the total luminous transmittance.

It would naturally flow that the combination of Jing and Inaba would have a total luminous transmittance of not lower than 75%, because the compositions of the thermoplastic polymer layer, the polyamide-based resin layer and the thermoplastic resin layer are substantially similar. Articles with a substantially similar structure and chemical composition as the claimed invention. Products of identical structure and

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composition cannot have mutually exclusive properties. The burden is on the Applicants to prove otherwise.

In regards to claim 10, Jing is silent with regards to the die temperature being not higher than 250°C.

Inaba discloses that in the case of extrusion or blow molding, it is appropriate to conduct heating so that the cylinder temperature may reach 200°C [0094].

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the die temperature of 200°C as disclosed in Inaba in the coextrusion process of Jing, because the die temperature of 200°C as disclosed in Inaba provides a temperature at which such adverse effects as foaming due to thermal decomposition of the fluorine-containing ethylenic polymer itself can be suppressed [0094]

In regards to claim 11, Jing discloses molded multilayer articles comprising the laminated resin (col. 8 lines 49-62).

In regards to claims 12-15, Jing discloses fuel-line hoses, tubing, films, containers and bottles (col. 8 lines 49-62).

3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jing et al. (6,156,400, hereinafter "Jing") in view of Inaba et al. (US 6,881,460 "Inaba") and in further view of Araki et al. (US 6,680,124, hereinafter "Araki").

In regards to claim 8, the combination of Jing and Inaba is silent with regards to the thickness of the polyamide-based resin layer and the thickness of the thermoplastic polymer layer.

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Araki discloses a fluorine-containing polymer that is firmly adhered to a substrate (col. 3 lines 1-3). The substrate may comprise an organic material (col. 13 lines 57-64). The organic material comprises polyamide (col. 14 lines 19-24). The thickness of the fluorine-containing material may be from 5 to 2,000 μm , preferably from 10 to 1,000 μm (cols. 13-14, lines 65-1). The thickness of the organic material layer may be from 10 to 9,000 μm , preferably from 15 to 3,000 μm (col. 14 lines 1-3). Thus, the thickness of the organic layer does not exceed one fifth of the thickness of the thermoplastic polymer layer.

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the thicknesses of the organic material layer and the fluorine-containing material of Araki in the multilayer articles of the combination of Jing and Inaba, because the thicknesses of the organic material layer and the fluorine-containing material of Araki allows the fluorine-containing adhesive material to impart better adhesion strength not only to a fluorine-containing polymer but also other organic materials (col. 14 lines 1-12).

Response to Arguments

4. Applicant's arguments with respect to claims 1 and 5-15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

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5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELLEN S. WOOD whose telephone number is (571)270-3450. The examiner can normally be reached on M-F 730-5 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571)272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ELLEN S WOOD/
Examiner, Art Unit 1782

/Rena L. Dye/
Supervisory Patent Examiner, Art Unit 1782